

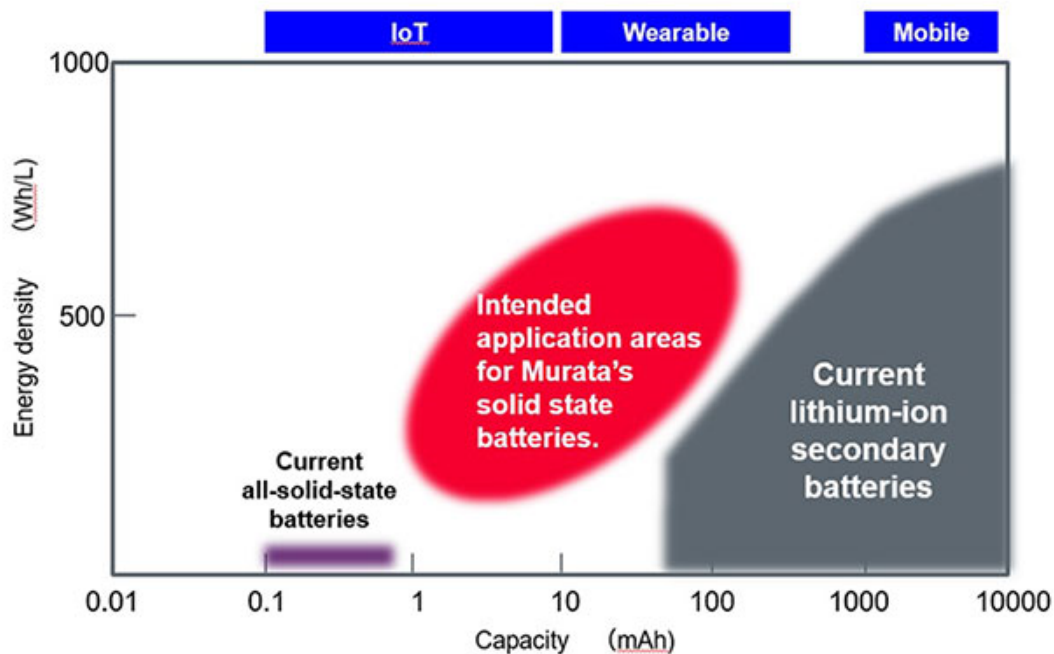
**Murata develops solid-state battery with industry's highest energy density**  
**For wearables applications, oxide ceramic electrolyte solution**  
**provides reliability and durability**

The development of the solid-state battery involved integrating process technology used in Murata's main products, such as multilayer ceramic capacitors and other multilayer devices, and diverse materials technology amassed through the development of cutting-edge electronic components. The battery employs an oxide ceramic electrolyte instead of the electrolytic solution utilized in conventional batteries, making it noncombustible and strongly heat-resistant.

Combining compact size and high energy density while delivering excellent performance even in harsh environments, the solid-state battery will contribute to the realization of new wearable devices that are smaller and more reliable than was previously possible. The new battery also delivers safety and durability far superior to conventional lithium-ion secondary batteries, making it ideal for wearable devices such as wireless earphones that require a high degree of safety and are intended to be used for extended periods of time, as well as a good match

for the diverse needs of the emerging IoT society.

“The new product brings together multiple Murata technologies to deliver substantially larger capacity than previously developed solid-state batteries. By putting in place a production system capable of providing a stable supply of highly reliable products, Murata is contributing to the realization of a world in which everyone can safely utilize electronic devices under all sorts of environments,” said Norio Nakajima, Representative Director, Senior Executive Vice President Director of the of the Module Business Unit.



Range of ordinary secondary batteries and target range of solid-state battery

## Overview of solid-state battery

### Overview of solid-state battery

Size 5 mm to 10 mm (L) × 5 mm to 10 mm (W) × 2 mm to 6 mm (H)

Capacity 2 mAh to 25 mAh (25°C)

Rated  
voltage 3.8 V

Electrolyte Oxide ceramic

Applications Anticipated applications include wearable devices and IoT devices.

Note Available as surface mount device

### Production facility and schedule

Production  
facility Murata Manufacturing Company, Ltd., Yasu Division (2288,  
Oshinohara, Yasu-shi, Shiga Prefecture)

Production  
quantity Approximately 100,000 units/month during fiscal 2020

Note: The solid-state battery shown in the photo is a sample, and the specifications  
and external appearance of the final product are subject to change.

\* As of June 2019, according to research by Murata.